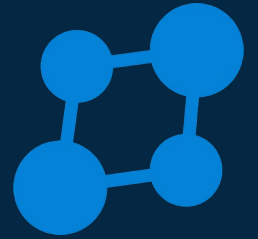# AI Demystified

Understanding LLMs and Their Impact

February 12, 2026 | 9:00 - 11:00 AM

Derek Ross | Developer Relations | Soapbox

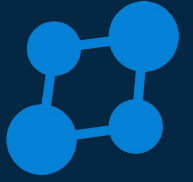# What You'll Learn Today

► AI & LLM Fundamentals -- what they are, how they work

► The AI landscape -- major tools and real-world applications

► Regulatory & ethical considerations -- what you need to know

► Prompting 101 -- how to get great results from AI tools

► Evaluating AI output -- critical thinking in the age of AI

Quick Poll

"Have you used an AI tool before?"

Raise your hand!

▶ ChatGPT, Claude, or Gemini?

▶ Image generation (Midjourney, DALL-E)?
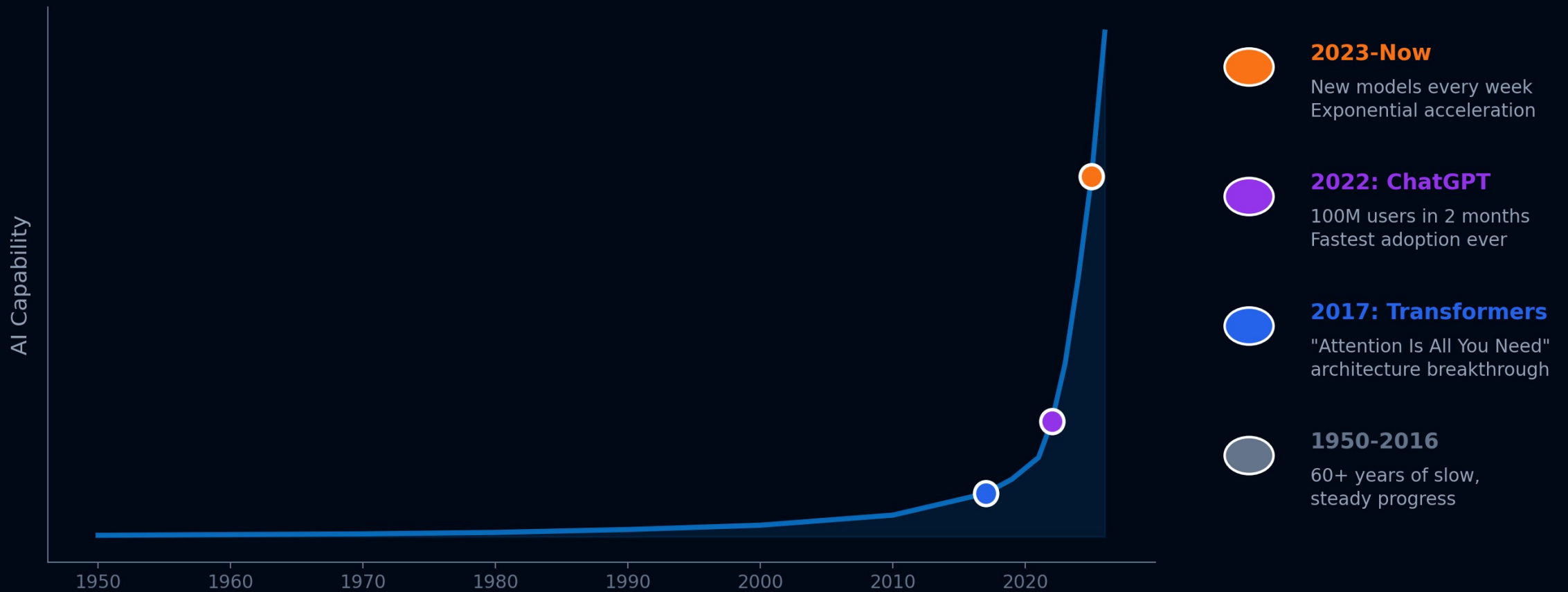
▶ AI-powered search (Perplexity)?

▶ Something else?

What Is AI?

From Turing to Transformers

A Brief History of AI
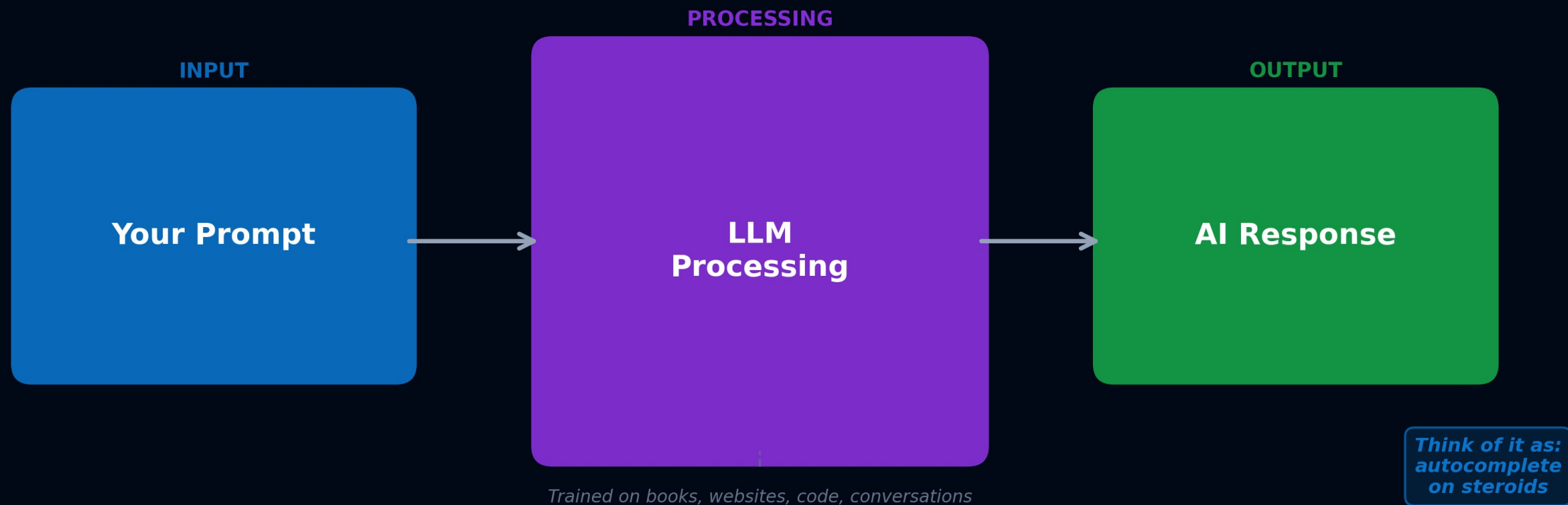
▶ 1950s -- Alan Turing asks: "Can machines think?"

▶ 1960s-80s -- Expert systems: hand-coded rules

▶ 1990s-2010s -- Machine learning: learning from data

▶ 2017 -- The Transformer architecture (Google) changes everything

▶ 2022 -- ChatGPT launches, AI goes mainstream overnight

The Acceleration

AI Capability (y-axis)

x-axis: 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020

2023-Now
New models every week
Exponential acceleration

2022: ChatGPT
100M users in 2 months
Fastest adoption ever

2017: Transformers
"Attention Is All You Need"
architecture breakthrough

1950-2016
60+ years of slow,
steady progress

How LLMs Actually Work

In Plain English

PROCESSING

INPUT

OUTPUT

Your Prompt

LLM Processing

AI Response

Trained on books, websites, code, conversations

Think of it as: autocomplete on steroids

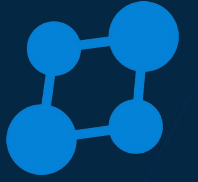Key concept: pattern matching at scale, not sentience. It predicts -- it doesn't think.

Strengths vs. Limitations

What LLMs Are Good At

✔ Summarizing & explaining concepts

✔ Drafting & editing text

✔ Translating languages

✔ Brainstorming & ideation

✔ Writing & debugging code

✔ Analyzing data & patterns

Where They Struggle

✘ Hallucinations (confident mistakes)

✘ Real-time or very recent info

✘ Nuanced judgment & common sense

✘ Knowing what it doesn't know

✘ Consistency across long outputs

✘ True understanding vs. pattern matching

The AI Landscape Today

Major tools, services, and how people are using them

AI Chat Assistants

The Big Three (and more)

▶ ChatGPT (OpenAI) -- the one that started the craze, general purpose

▶ Claude (Anthropic) -- strong at writing, analysis, long documents

▶ Gemini (Google) -- integrated with Gmail, Docs, Search

▶ Meta AI (Llama) -- open source, runs locally

▶ Maple AI -- open source, the best for privacy

▶ Each has different strengths -- try more than one!

LIVE DEMO

Compare AI Assistants

► Ask the same question to ChatGPT, Claude, and Gemini

► Compare the responses: style, accuracy, depth

► Notice: they each have a 'personality'

► Audience: suggest a question to ask!

AI Image Generation

▶ Midjourney -- stunning artistic quality, runs via Discord

▶ DALL-E (OpenAI) -- built into ChatGPT, easy to use

▶ Stable Diffusion -- open source, runs locally

▶ Flux, Ideogram -- newer contenders with unique strengths

▶ Capabilities: photorealistic images, art styles, product mockups

▶ Limitations: text in images, hands, consistency across images

AI Audio & Video

▶ Voice Cloning -- ElevenLabs: clone any voice with minutes of audio

▶ Text-to-Speech -- natural-sounding narration for any text

▶ Video Generation -- Sora (OpenAI), Runway: text to video clips

▶ Music Generation -- Suno, Udio: create songs from text prompts

▶ Implications: amazing creative tools, but also deepfake risks
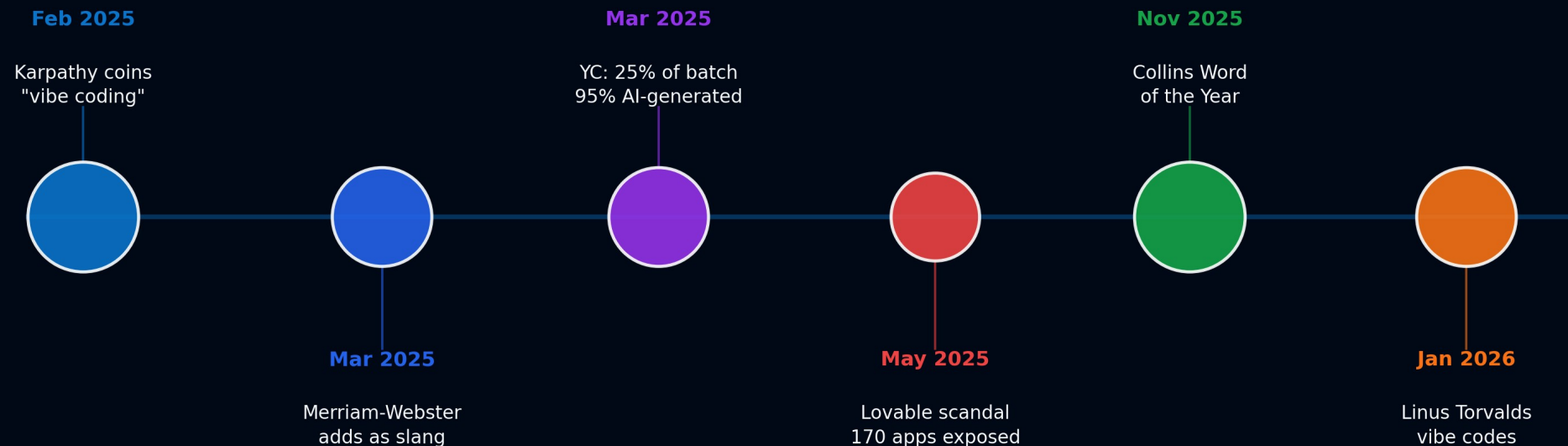
AI for Code & Development

Preview of Session 2

▶ GitHub Copilot -- AI pair programmer, autocompletes code

▶ Cursor -- AI-native code editor, full codebase awareness

▶ OpenCode -- open source AI coding agent in your terminal

▶ ChatGPT / Claude -- paste code, ask for help, debug errors

Vibe Coding: From Meme to Movement

> "There's a new kind of coding I call 'vibe coding,' where you fully give in to the vibes, embrace exponentials, and forget that the code even exists."
>
> -- Andrej Karpathy, Feb 2, 2025

Feb 2025
Karpathy coins "vibe coding"

Mar 2025
Merriam-Webster adds as slang

Mar 2025
YC: 25% of batch 95% AI-generated

May 2025
Lovable scandal 170 apps exposed

Nov 2025
Collins Word of the Year

Jan 2026
Linus Torvalds vibe codes

Specialized AI Tools

▶ NotebookLM (Google) -- upload documents, AI researches for you

▶ Perplexity -- AI-powered search with cited sources

▶ Grammarly -- AI writing assistant for everything you write

▶ Canva AI -- graphic design with AI generation and editing

▶ Notion AI, Otter.ai, Onyx, Claude CoWork -- productivity everywhere

▶ OpenClaw -- a personalized, autonomous assistant (agent)

How People Are Using AI Right Now

Education
Tutoring, lesson planning, accessibility tools

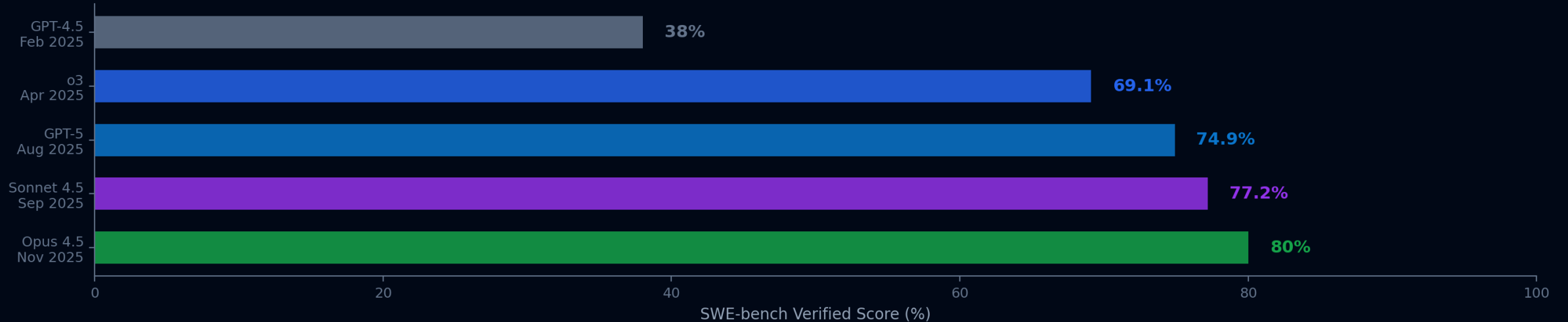## Business
Customer service, content creation, data analysis

Creative
Writing, art, music, film production

Healthcare
Diagnostics, drug discovery, clinical documentation

The Models Keep Getting Better

SWE-bench Verified: AI coding quality scores doubled in under a year

Model	Score
GPT-4.5 Feb 2025	38%
o3 Apr 2025	69.1%
GPT-5 Aug 2025	74.9%
Sonnet 4.5 Sep 2025	77.2%
Opus 4.5 Nov 2025	80%

SWE-bench Verified Score (%)

From "not too bad for throwaway projects" to production-quality code generation

AI in Your Workplace Today

Practical ways businesses are using AI right now

Drafting & Communications

Emails, proposals, reports, social media posts

Research & Analysis

Market research, competitor analysis, summarizing reports

Customer Service

Chatbots, FAQ automation, response templates
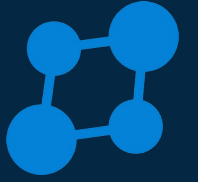
Marketing & Content

Ad copy, blog posts, SEO, campaign strategy

Data & Spreadsheets

Analyzing trends, generating formulas, cleaning data

Legal & Compliance

Contract review, policy drafts, regulatory summaries

Navigating AI Responsibly

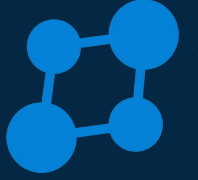Regulation, ethics, and critical thinking

The Regulatory Landscape

► EU AI Act -- first comprehensive AI law, risk-based framework

► US approach -- executive orders, sector-specific guidance (evolving)

► Key concerns: bias, privacy, intellectual property, job displacement

► Copyright questions -- who owns AI-generated content?

► This affects everyone, not just tech companies

Ethics, Misinformation & Deepfakes

- ▶ AI-generated misinformation is increasingly hard to detect

- ▶ Deepfakes: realistic fake video/audio of real people

- ▶ Bias in AI: training data reflects societal biases

- ▶ The "black box" problem: we don't always know why AI decides what it does

- ▶ Trust but verify -- critical thinking is more important than ever

How to Spot AI-Generated Content

► Text: overly polished, generic phrasing, lacks personal voice

► Images: check hands, text, backgrounds, symmetry artifacts

► Video: unnatural blinking, lip sync issues, edge distortion

► Audio: unusual cadence, breathing patterns, emotional flatness

► When in doubt: reverse image search, check sources, verify claims

Working Effectively with AI

Prompting techniques and evaluating output

Prompting 101

A prompt is simply the instruction you give to an AI.

✗ **Bad Prompt**

"Write me something about dogs"

▶ Generic output

▶ Unfocused

▶ Not useful

✓ **Good Prompt**

"You are a veterinarian writing for new pet owners. Write a 300-word blog post about the top 3 things first-time dog owners should know. Use a friendly, reassuring tone."

▶ Specific & targeted

▶ Right tone & length

▶ Actually usable

The difference? Context, specificity, and clear expectations.

Key Prompting Techniques

▶ Be specific -- provide context, length, format, audience

▶ Give examples -- "Write it like this: ..."

▶ Assign a role -- "You are a financial advisor..."

▶ Break complex tasks into steps -- one thing at a time

▶ Iterate -- treat it like a conversation, not a search engine

▶ Ask it to explain its reasoning -- better answers, more transparency

LIVE DEMO

Live Prompting Exercise

► Audience volunteer suggests a topic or task

► We'll craft a prompt together using the techniques

► Compare: basic prompt vs. engineered prompt

► See the difference in quality live!

The Producer Mindset

You're not the artist writing code -- you're the producer shaping the song.

Music Producer

▶ Doesn't write every note

▶ Provides taste & direction

▶ Knows when it's done

▶ Shapes the song

=

You + AI

▶ Don't write every line of code

▶ Provide vision & judgment

▶ Know when to accept or retry

▶ Shape the product

"I'm frankly exhausted by the end of the day... it's a deeply intellectual exercise." -- Andrew Ng

Evaluating AI Output

AI is confident, not correct

▶ AI will always give you an answer -- even when it's wrong

▶ Hallucinations: plausible-sounding but fabricated information

▶ Always verify facts, statistics, and citations independently

▶ Use AI as a starting point, not a final answer

▶ Critical thinking is the essential human skill in the AI age

When to Trust vs. Double-Check

Higher Confidence   **Always Verify**

| Summarizing | Brainstorming | Drafting | Explaining concepts | Recent events | Facts & stats | Legal / Medical |

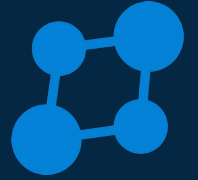## Higher Confidence

▶ Summarizing text you provide

▶ Brainstorming and ideation

▶ Drafting and editing writing

▶ Explaining well-known concepts

Always Verify

▶ Specific facts and statistics

▶ Legal or medical advice

▶ Academic citations and sources

▶ Recent events or news

Key Takeaways

1 **AI is a tool**
Powerful, but it requires your judgment and critical thinking

2 **Be the producer**
You provide the vision -- AI handles the details

3 **Be specific**
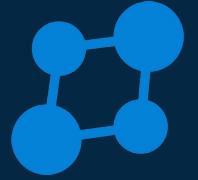Better prompts = better results. Context is everything

4 **Verify everything**
AI is confident, not correct. Always double-check important info

5 **Start experimenting**
The best way to learn is to try -- from chat to vibe coding

Session 2: From Ideas to Apps

Building with AI and Shakespeare

► Hands-on workshop -- bring your laptop or phone!

► Vibe code your own web application from scratch

► Learn Shakespeare -- Soapbox's AI-powered app builder

► No coding experience required -- you'll be the producer!

Questions?

No question is too basic -- ask away!

Resources & Next Steps

▶ ChatGPT – chatgpt.com (free tier available)

▶ Claude -- claude.ai (free tier available)

▶ Gemini -- gemini.google.com (free with Google account)

▶ Perplexity -- perplexity.ai (AI-powered search)

▶ NotebookLM -- notebooklm.google.com (research assistant)

▶ Shakespeare -- shakespeare.diy (build apps with AI -- Session 2!)

Thank you! | Derek Ross | derekross@gmail.com